Code No.: EE401ES	R20	H.T.No.			8	R						

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Supply) -June- 2025
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(MECH)

[Time: 3 Hours] **[Max. Marks: 70]**

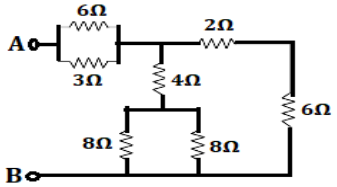
Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1.	a)	Classify electrical circuit elements.	[2M]
	b)	Define peak value.	[2M]
	c)	Outline the function of cable.	[2M]
	d)	List the components of LT Switchgear.	[2M]
	e)	What is the function of DC motor?	[2M]
	f)	Show the transformer schematic diagram.	[2M]
	g)	Relate diode current and voltage.	[2M]
	h)	Summarize the operation of half-wave rectifier.	[2M]
	i)	Label the terminals of a bipolar junction transistor.	[2M]
	j)	Compare CE and CB characteristics of a transistor.	[2M]

PART-B **(50 Marks)**

2.	a)	Solve for the equivalent resistance between terminals A and B of the network shown below.	[5M]



	b)	Explain the Kirchhoff's laws?	[5M]
		OR	
3.	a)	The rms current in a single phase AC network is given by 10 A when the applied rms voltage is 220 V and the power factor is 0.8. Solve for the apparent, reactive and the real powers.	[6M]
	b)	Relate voltage and currents in star and delta connections of three phase AC balanced system.	[4M]
4.	a)	Discuss about types of wires and cables.	[6M]
	b)	Estimate the electricity bill amount for a month of 30 days, if the following appliances are used as specified. (i) 3 LED bulbs of 7 W for 5 hours, (ii) 3 tube lights of 50 W for 4 hours, (iii) A T.V. of 80 W for 6 hours, (iv) 2 fans of 60 W for 10 hours. Take the rate of electricity is Rs. 3.00 per unit.	[4M]
		OR	
5.	a)	Discuss about power factor improvement.	[6M]
	b)	Explain the operation of ELCB with neat diagram?	[4M]
6.	a)	Explain in detail about the losses in a transformer and calculation of efficiency?	[6M]
	b)	An 8-pole, 1200 rpm, DC generator has 500 armature conductors and a useful flux of 0.05 Wb per pole. Calculate the generated EMF when the armature is (i) Lap wound (ii) Wave wound.	[4M]
		OR	
7.	a)	Explain the construction of 3-phase induction motor?	[5M]
	b)	Illustrate the working principle of synchronous generator.	[5M]

8.a) Explain the operation of PN junction diode? [4M]

b) Compare the characteristics of center tapped transformer type and bridge type full wave rectifiers. [6M]

OR

9.a) Explain how Zener diode acts as a voltage regulator? [6M]

b) Compare ideal and practical diodes. [4M]

10.a) Illustrate the operation of a transistor as an amplifier. [5M]

b) Distinguish PNP and NPN transistors. [5M]

OR

11.a) What is FET and explain the working of FET? [6M]

b) Compare BJT and FET in all aspects. [4M]

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